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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

LEE, EUGENE

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 02/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/692,351	Applicant(s) ANDREWS ET AL.	
	Examiner Eugene Lee	Art Unit 2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/29/04, 1/3/05</u> | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Election/Restrictions

1. In response to the paper filed 11/8/04, the Examiner cites the following paragraph from MPEP =>

809.02(a) Election Required

Where generic claims are present, the examiner should send a letter including only a restriction requirement or place a telephone requirement to restrict (the latter being encouraged). See MPEP § 812.01 for telephone practice in restriction requirements.

Action as follows should be taken:

- (A) Identify generic claims or indicate that no generic claims are present. See MPEP § 806.04(d) for definition of a generic claim.
- (B) Clearly identify each (or in aggravated cases at least exemplary ones) of the disclosed species, to which claims are restricted. **The species are preferably identified as the species of figures 1, 2, and 3 or the species of examples I, II, and III, respectively. In the absence of distinct figures or examples to identify the several species, the mechanical means, the particular material, or other distinguishing characteristic of the species should be stated for each species identified. If the species cannot be conveniently identified, the claims may be grouped in accordance with the species to which they are restricted.**

However, in order to move the case forward, the restriction filed 10/5/04 is withdrawn.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: element 49 (page 19, line 19). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are

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required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: element 30a (see FIG. 5). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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Claim Objections

4. Claim 9 is objected to because of the following informalities: the word "one" (i.e. on) is misspelled on line 3 of said claim. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11 recites the limitation "first and second conductive leads" in lines 5-6 of said claim. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1 thru 5, 8, 16 thru 20, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jaffe 3,760,237 in view of Gramann et al. 5,907,151. Jaffe discloses (see, for example, Fig. 3) a light emitting die package comprising a circular metal support header (substrate) 11, conical light director (reflector plate) 22, and lens 26.

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Jaffe does not disclose a thermally conductive, electrically insulating film, a first conductive element on said insulating film, and a second conductive element on said insulating film, wherein at least one of said first and second conductive elements comprises a mounting pad for mounting a light emitting die thereon. However, Gramann discloses (see, for example, FIG 1) a light emitting die package comprising a body (light-emitting diode) 1, carrier plate 7, insulating layer (thermally conductive, electrically insulating film) 15, electrically conductive terminal track (first conductive element) 13, electrically conductive terminal track (second conductive element) 12, and underside contact (mounting pad) 22. The insulating layer, electrically conductive tracks, and underside contact provide connections on the carrier plate. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have a thermally conductive, electrically insulating film, a first conductive element on said insulating film, and a second conductive element on said insulating film, wherein at least one of said first and second conductive elements comprises a mounting pad for mounting a light emitting die thereon in order to provide connections to the substrate.

Regarding claim 3, see, for example, column 2, lines 62-66, wherein Jaffe discloses the viscous material should be transmissive to light and may be silicon rubber.

Regarding claim 4, see, for example, column 6, lines 10-12, wherein Gramann discloses the electrically conductive terminal tracks composed of aluminum (metal traces).

Regarding claim 8, Jaffe in view of Gramann does not disclose said insulating film comprising a ceramic polymer film. However, it would have been obvious to one of ordinary skill in the art at the time of invention to have said insulating film comprising a

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ceramic polymer film in order to protect the substrate. Also, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice (In re Leshin, 125 USPQ 416).

Regarding claim 26, see, for example, FIG 1, wherein Gramann discloses a connecting conductor (metal lead) 26.

9. Claims 6, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jaffe '237 in view of Gramann et al. '151 as applied to claims 1-5, 8, 16-20, 25, and 26 above, and further in view of Carey et al. 6,274,924 B1. Jaffe in view of Gramann does not disclose said substrate comprising a metal selected from the group consisting of copper and aluminum, and a copper/aluminum alloy. However, Carey discloses (see, for example, 2, lines 49-58) a slug (substrate) 10 comprising a material such as copper, aluminum, and alloys thereof. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have said substrate comprising a metal selected from the group consisting of copper and aluminum, and a copper/aluminum alloy in order to adequately stabilize a light emitting diode on a substrate.

10. Claims 9 thru 13, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jaffe '237 in view of Gramann et al. '151 as applied to claims 1-5, 8, 16-20, 25, and 26 above, and further in view of Jory et al. 6,501,103 B1. Jaffe in view of Gramann does not disclose at least one via hole through said substrate. However, Jory discloses (see, for example, FIG. 7) a light emitting diode assembly comprising a

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substrate 3, and via hole 4 wherein the via hole is insulated by a layer from the pin 16. It would have been obvious to one of ordinary skill in the art at the time of invention to have at least one via hole through said substrate in order to provide further connections to the light emitting diode underneath the substrate.

Regarding claims 10 and 11, see, for example, FIG. 7 wherein Jory discloses the via hole being insulated by a layer wherein the layer covers the pin (conductive trace) 16.

Regarding claim 12, see, for example, FIG. 7 wherein Jory discloses a circuit board (thermally conductive insulating film) 2, and solder (third electrical lead).

Regarding claim 13, Jaffe in view of Gramann does not disclose an external heat sink coupled to said substrate. However, Jory discloses (see, for example, FIG. 7) a light emitting diode assembly comprising a substrate 3, and circuit board (external heat sink) 2. It would have been obvious to one of ordinary skill in the art at the time of invention to have an external heat sink coupled to said substrate in order to dissipate heat and have further connections in the semiconductor device.

Regarding claim 27, see, for example, FIG 1, wherein Gramann discloses a underside contact (metal contact pad) 22.

11. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jaffe '237 in view of Gramann et al. '151 in view of Jory et al. 6,501,103 B1 as applied to claims 9-13, and 27 above, and further in view of Kuwabara 6,124,635. Jaffe in view of Gramann in view of Jory does not disclose said substrate having a bottom side plated with metals for coupling with said external heat sink. However, Kuwabara discloses (see, for example, column 9, lines 20-24) plating a metallized layer so they can be joined to a heat

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sink. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have said substrate having a bottom side plated with metals for coupling with said external heat sink in order to stabilize a bottom side with a heat sink.

12. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jaffe '237 in view of Gramann et al. '151 as applied to claims 1-5, 8, 16-20, 25, and 26 above, and further in view of Maekawa 6,281,435 B1. Jaffe in view of Gramann does not disclose at least one conductive element extending from the mounting pad to a side of said substrate. However, Maekawa discloses (see, for example, FIG. _1) a light emitting package comprising electrodes (conductive element) 3a, 4a that extend to the side of the substrate

2. It would have been obvious to one of ordinary skill in the art at the time of invention to have at least one conductive element extending from the mounting pad to a side of said substrate in order to make a connection underneath the substrate.

13. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jaffe '237 in view of Gramann et al. '151 as applied to claims 1-5, 8, 16-20, 25, and 26 above, and further in view of Mills et al. 6,525,386 B1. Jaffe in view of Gramann does not disclose said lens comprising a trough. However, Mills discloses (see, for example, FIG. 5B) a light emitting package comprising a trough 552. Mills discloses (see, for example, column 6, lines 9-12) the trough avoids pressure necrosis. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have said lens comprising a trough in order to avoid pressure necrosis.

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14. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jaffe '237 in view of Gramann et al. '151 as applied to claims 1-5, 8, 16-20, 25, and 26 above, and further in view of Butterworth et al. 5,847,507. Jaffe in view of Gramann does not disclose said lens comprising frequency shifting compounds. However, Butterworth discloses (see, for example, Figure 2) a light emitting package comprising a die 110 and lens 240. In column 4, lines 34-44, Butterworth discloses the lens having fluorescent dyes (frequency shifting compounds). It would have been obvious to one of ordinary skill in the art at the time of invention to have said lens comprising frequency shifting compounds in order to have a relatively efficient way to produce various colored LEDs.

15. Claims 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jaffe '237 in view of Gramann et al. '151 as applied to claims 1-5, 8, 16-20, 25, and 26 above, and further in view of Barnett et al. 6,541,800 B2. Jaffe in view of Gramann does not disclose said lens comprising diffusant. However, Butterworth discloses (see, for example, column 6, lines 15-18) a lens comprising dispersants (diffusants). It would have been obvious to one of ordinary skill in the art at the time of invention to have said lens comprising diffusants in order to diffuse the outputted light.

Regarding claim 24, Jaffe in view of Gramann does not disclose said lens comprising a phosphor. However, Barnett discloses (see, for example, column 6, lines 20-24) a lens comprising phosphor material (a phosphor). It would have been obvious to one of ordinary skill in the art at the time of invention to have said lens comprising a phosphor in order to generate white light when excited with a blue, ultraviolet, or other color LED.

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INFORMATION ON HOW TO CONTACT THE USPTO

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eugene Lee whose telephone number is 571-272-1733.

The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 571-272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Eugene Lee
February 17, 2005

A handwritten signature in black ink, appearing to be 'Eugene Lee', with a stylized, flowing script.